

Claims

Please amend the claims as follows:

1. (Currently Amended) A method of representing type information for a typed intermediate language via objects of classes in a class hierarchy, wherein the class hierarchy comprises at least one class and a plurality of sub-classes for representing different type classifications, the method comprising:

instantiating one or more objects of one or more of the sub-classes of the hierarchy, wherein the one or more sub-classes represent classifications of types for the typed intermediate language; and storing information in the one or more objects;

wherein the typed intermediate language is capable of representing a plurality of different programming languages, and wherein the one or more objects represent type information for instructions in the typed intermediate language of a variable in software during compilation of the software.

2. (Canceled)

3. (Original) The method of claim 1 wherein at least one of the objects comprises information for a size of a type represented by the object.

4. (Currently Amended) The method of claim 1 wherein at least one of the one or more sub-classes inherits from an abstract type that wraps an externally defined type, the abstract type providing a mapping from [[a]] the typed intermediate language to original source code.

5. (Original) The method of claim 1 wherein at least one of the one or more sub-classes represents container types.

6. (Original) The method of claim 1 wherein at least one of the one or more sub-classes represents pointer types.

7. (Original) The method of claim 1 wherein at least one of the one or more sub-classes represents function types.

8. (Original) The method of claim 1 wherein at least one of the one or more sub-classes represents unmanaged array types.

9. (Original) The method of claim 1 wherein at least one of the one or more sub-classes represents class types.

10. (Original) The method of claim 1 wherein at least one of the one or more sub-classes represents managed array types.

11. (Original) The method of claim 1 wherein at least one of the one or more sub-classes represents struct types.

12. (Original) The method of claim 1 wherein at least one of the one or more sub-classes represents interface types.

13. (Original) The method of claim 1 wherein at least one of the one or more sub-classes represents enumerated types.

14. (Original) The method of claim 1 wherein at least one of the one or more sub-classes represents primitive types.

15. (Original) The method of claim 14 wherein at least one of the sub-classes representing primitive types represents the following types: int, float, and void.

16. (Original) The method of claim 14 wherein at least one of the sub-classes representing primitive types can represent an unknown type.

17. (Original) The method of claim 14 wherein at least one of the sub-classes representing primitive types is extensible to represent one or more additional primitive types.
18. (Original) The method of claim 1 wherein at least one of the one or more sub-classes is defined from the group consisting of: 'ContainerType', 'PtrType', 'FuncType', 'ClassType', 'StructType', 'InterfaceType', and 'EnumType'.
19. (Original) The method of claim 1 wherein at least one of the one or more sub-classes is defined as 'PrimType'.
20. (Currently Amended) A computer-readable medium having a software program thereon, the program comprising computer executable instructions for implementing a method for representing type information for a typed intermediate language using a class hierarchy for representing different type classifications, the method comprising:
defining a programming class of the class hierarchy as 'PrimType', wherein the programming class represents type information for the typed intermediate language;
associating a size with instances of the 'PrimType' class; and
associating a kind of type with instances of the 'PrimType' class.
21. (Original) The computer-readable medium of claim 20 wherein the size represents a size of a machine representation of a value.
22. (Previously Presented) The computer-readable medium of claim 20 wherein associating a size with instances of the 'PrimType' class comprises defining the size as 'BitSize'.
23. (Original) The computer-readable medium of claim 20 wherein the kind of type represents a type classification.

24. (Previously Presented) The computer-readable medium of claim 20 wherein associating a kind of primitive type with instances of the 'PrimType' class comprises defining the kind of type as 'PrimTypekind'.

25. (Previously Presented) The computer-readable medium of claim 20 wherein the method further comprises associating a type of size with instances of the 'PrimType' class.

26. (Previously Presented) The computer-readable medium of claim 25 wherein associating a type of size with instances of the 'PrimType' class comprises defining the type of size as 'SizeKind'.

27. (Original) The computer-readable medium of claim 25 wherein the type of size can comprise actual, symbolic, or unknown types of size.

28. (Original) The computer-readable medium of claim 20 wherein the class 'PrimType' represents a plurality of types, the plurality of types comprising int, float, unknown, void, condition code, and unsigned int types.

29. (Currently Amended) A computer-readable medium having computer-executable instructions for implementing a method for representing type information for a typed intermediate language using a class hierarchy for representing different type classifications, the method comprising:

describing a type classification for representing container types for instructions in the typed intermediate language for [[of]] a plurality of programming languages, wherein the type classification is described as 'ContainerType', and wherein the type classification comprises defining a sub-class of the class hierarchy.

30. (Currently Amended) The computer-readable medium of claim 29, wherein the method further comprises:

describing a type classification for representing pointer types **for instructions in the typed intermediate language for** **[of]** a plurality of programming languages, wherein the type classification is described as 'PtrType', **and wherein the type classification comprises defining a sub-class of the class hierarchy.**

31. (Currently Amended) A method **for representing type information for a typed intermediate language using a class hierarchy by** **[of]** programmatically defining a type representation, the method comprising:

defining a base class **of the class hierarchy;**

defining a plurality of classes hierarchically below the base class, **wherein the plurality of classes represent type information for the typed intermediate language, and** wherein the **plurality of** classes represent at least pointer types, container types and function types of a plurality of programming languages.

32. (Currently Amended) The method of claim 31 further comprising defining a plurality of classes hierarchically below the class representing container types, **wherein the plurality of classes represent type information for the typed intermediate language, and** wherein the plurality of classes represent at least class types, struct types, interface types, and enumerated types of a plurality of programming languages.

33. (Currently Amended) The method of claim 32 further comprising defining a class hierarchically below the class representing class types, **wherein the class represents type information for the typed intermediate language, and** wherein the class represents unmanaged array types of a plurality of programming languages.

34. (Currently Amended) The method of claim 31 further comprising defining a class hierarchically below one of the plurality of classes, **wherein the class represents type information for the typed intermediate language, and** wherein the class represents primitive types of a plurality of programming languages.

35. (Original) The method of claim 34 wherein the class further represents an unknown type.

36. (Currently Amended) A computer-readable medium having a software program thereon, the program comprising computer executable instructions for implementing a method for representing type information for a typed intermediate language using a class hierarchy for representing different type classifications, the method comprising:

defining a programming class of the class hierarchy as 'ContainerType', wherein an object of class 'ContainerType' is a type representation ~~in an~~ for the typed intermediate language for container types in a section of code written in one of a plurality of programming languages;

defining a programming class of the class hierarchy as 'PtrType', wherein an object of class 'PtrType' is a type representation ~~in an~~ for the typed intermediate language for pointer types in a section of code written in one of a plurality of programming languages;

defining a programming class of the class hierarchy as 'FuncType', wherein an object of class 'FuncType' is a type representation ~~in an~~ for the typed intermediate language for function types in a section of code written in one of a plurality of programming languages;

defining a programming class of the class hierarchy as 'ClassType', wherein an object of class 'ClassType' is a type representation ~~in an~~ for the typed intermediate language for class types in a section of code written in one of a plurality of programming languages;

defining a programming class of the class hierarchy as 'StructType', wherein an object of class 'StructType' is a type representation ~~in an~~ for the typed intermediate language for struct types in a section of code written in one of a plurality of programming languages;

defining a programming class of the class hierarchy as 'InterfaceType', wherein an object of class 'InterfaceType' is a type representation ~~in an~~ for the typed intermediate language for interface types in a section of code written in one of a plurality of programming languages; and

defining a programming class of the class hierarchy as 'EnumType', wherein an object of class 'EnumType' is a type representation ~~in an~~ for the typed intermediate language for enumerated types in a section of code written in one of a plurality of programming languages.

37. **(Currently Amended)** The computer-readable medium of claim 36 wherein the method further comprises program code for defining a programming class of the class hierarchy as 'PrimType', wherein an object of class 'PrimType' is a type representation ~~in an~~ for the typed intermediate language for primitive types in a section of code written in one of a plurality of programming languages.

38. (Previously Presented) The computer-readable medium of claim 36 wherein the method further comprises program code for associating a size with an object of any class.

39. (Previously Presented) The computer-readable medium of claim 36 wherein the method further comprises program code for associating a kind of type with an object of any class.